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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MAKOTO TOMIOKA and HIROSHI TSUYUKI

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Appeal 2009-003655  
Application 09/893,677  
Technology Center 2600

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Decided: March 24, 2010

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Before KENNETH W. HAIRSTON, JOHN C. MARTIN, and  
BRADLEY W. BAUMEISTER, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

NEW DECISION ON APPEAL

In response to the arguments (addressed *infra*) in the Request for Rehearing of our August 20, 2009, Decision on Appeal, and for the additional reasons set forth below, that Decision on Appeal is hereby vacated in favor of this New Decision on Appeal.

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's rejections of claims 1-18, which are all of the pending claims.<sup>1</sup>

Oral argument was held on August 12, 2009.

We have jurisdiction under 35 U.S.C. § 6(b). We affirm the Examiner's rejections and enter a new ground of rejection against claim 1 based on Takahashi's Figure 14, which is not relied on by the Examiner.

*A. Appellants' invention*

Appellants' invention is a rigid video-endoscope system used in the surgical field. Specification 1:4-5.

Appellants' Figure 3 is reproduced below.

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<sup>1</sup> As noted at page 3 of the Answer, claim 19, which was rejected at page 2 of the Final Action, has been canceled. Also, the Examiner (Answer 3) has withdrawn the rejection of claim 1 under 35 U.S.C. § 112, second paragraph, given at pages 2-3 of the Final Action.

FIG. 3

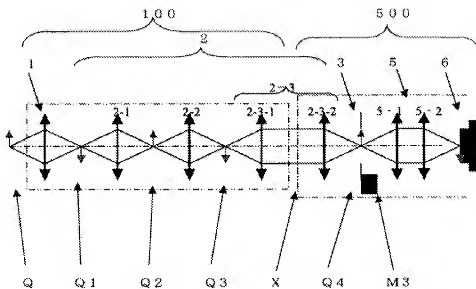


Figure 3 is a schematic view showing a basic construction of Appellants' invention. *Id.* at 8:22. As shown in this figure, the rigid video-endoscope system comprises a front-end insertion section 100 and a detachable camera head 500, the point of detachability being designated by the letter X. *Id.* at 9:1-2; 10:12-13. Each lens, represented by a double-headed arrow, can represent one or a plurality of lenses. *Id.* at 10:8-9. As explained below, the relay lenses are divided between insertion section 100 and camera head 500. Specifically, insertion section 100 comprises, in order from its distal end side or object side, an objective lens 1, a first relay lens 2-1, a second relay lens 2-2, and a front half section 2-3-1 of a third relay lens 2-3. *Id.* at 10:3-5. Camera head 500 comprises a rear half section 2-3-2 of the third relay lens 2-3, an imaging lens 5 including two lens sections 5-1, 5-

2, a view field mask 3 disposed between the rear half section 2-3-2 and the imaging lens, and a solid-state image sensor 6. *Id.* at 10:5-8.

The short single-headed arrows located between the lenses represent images, including an image Q1 formed by objective lens 1 and first, second, and third relay images Q2-Q4 formed by the first, second, and third relay lenses 2-1, 2-2, and 2-3, respectively. *Id.* at 10:15-18. Imaging lens 5 projects the third relay image Q4 onto image sensor 6. *Id.* at 11:3-5.

The detachability of insertion section 100 from camera head 500 permits the camera head to be used with any of a plurality of front-end insertion sections having different viewing directions adapted to particular surgical techniques or operators. *Id.* at 11:15-18.

#### *B. Claim 1*

The only independent claim before us is claim 1, which reads:

1. A rigid video-endoscope system including a front-end insertion section and a camera head, said rigid endoscope system comprising:

an objective optical system that forms an image of an object, a relay optical system that includes a plurality of lens units and relays the image formed by the objective optical system, an imaging optical system that forms an image of the relayed image and a solid-state image sensor that receives the image formed by the imaging optical system, and

wherein said camera head includes a part of said relay optical system, said imaging optical system and said solid-stage image sensor, and

the relayed image is formed between the relay optical system and the imaging optical system in the camera head, and

wherein said front-end insertion section includes the objective optical system and a remaining part of the relay optical system; and

the insertion section and camera head are detachable.

*C. The references and rejections*

The Examiner relies on the following references:

Takahashi et al. ("Takahashi")	US 5,588,948	Dec. 31, 1996
Igarashi ("Igarashi '232")	US 5,902,232	May 11, 1999
Igarashi ("Igarashi '634")	US 5,954,634	Sep. 21, 1999

Claims 1 and 3-18 stand rejected under 35 U.S.C. § 103(a) for obviousness over Igarashi '232 in view of Takahashi.

Claim 2 stands rejected under § 103(a) for obviousness over Igarashi '232 in view of Takahashi and Igarashi '634.

Because claims 3-5 depend on claim 2, we will treat claims 3-5 for purposes this appeal as though they stand rejected over the prior art that has been applied against claim 2.

THE ISSUE

The principal issue raised by Appellants' arguments is whether Takahashi discloses or suggests providing a part of a relay optical system in the camera head and the remaining part of the relay optical system in the inserting section.

THE REJECTION BASED ON IGARASHI '232 AND TAKAHASHI

Igarashi '232 discloses a non-flexible (i.e., rigid) endoscope for use in the medical field. Igarashi '232, col. 1, ll. 9-10.

The Examiner (Final Action 3) relies on Figures 3 and 12, of which Figure 3 is reproduced below.

**FIG. 3**

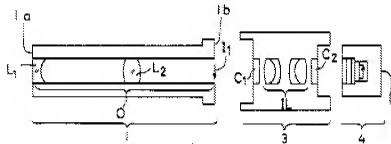


Figure 3 shows an embodiment of an endoscope used for TV monitoring. *Id.* at col. 8, ll. 41-42. Insert section 1 is equipped with an adaptor 3, such as a TV camera adaptor, and an imaging device 4, such as a TV camera. *Id.* at col. 8, ll. 42-46. Insert section 1 is detachable from TV camera adaptor 3 so that the insert section can be discarded after it is contaminated by being used. *Id.* at col. 8, ll. 61-64.

Figure 12 is reproduced below.

**FIG. 12**

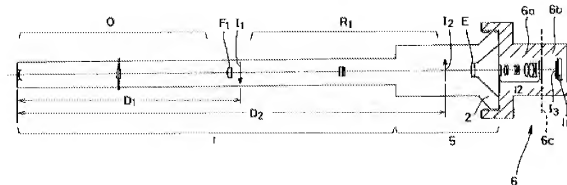


Figure 12 is a sectional view illustrating an optical system for an embodiment that includes a relay lens system. *Id.* at col. 5, ll. 21-23. Insert section 1 includes an objective lens system O disposed in the leading end thereof, a primary field lens F<sub>1</sub> disposed in the vicinity of a primary image I<sub>1</sub> formed by the objective lens system O, and a relay lens unit R<sub>1</sub> that relays the primary image I<sub>1</sub> so as to form a secondary image I<sub>2</sub>. *Id.* at col. 18, ll. 14-20. Grip section 5 includes an eyepiece lens system E that converts rays coming from the secondary image I<sub>2</sub>. *Id.* at col. 18, ll. 20-23. Attached to the eyepiece section 2 is a TV camera system 6 that is configured as a separate unit and includes a solid-state image pickup device 11 and an imaging lens system 12. *Id.* at col. 18, ll. 24-27.

The Examiner found that Igarashi '232 fails to disclose providing part of the relay optical system in the "camera head," which term we assume the Examiner is reading on TV camera system 6, and providing the remainder of

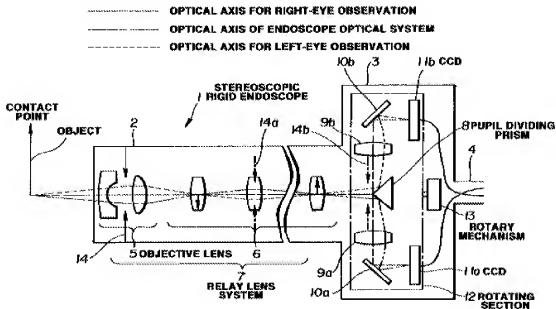


the relay optical system in insertion section 1. Final Action 4. To cure these deficiencies, the Examiner relies on Figures 1 and 2 of Takahashi:

Igarashi (US 5,902,232) fails to specifically teach where the camera head includes a part of the relay optical system, Takahashi et al. does (Takahashi: Figure 1). Takahashi further discloses the front end insertion section includes the objective optical system, a remaining part of the relay system, and the imaging optical system (Takahashi: figures 1-2).

Final Action 4.

Figure 1 of Takahashi is reproduced below.

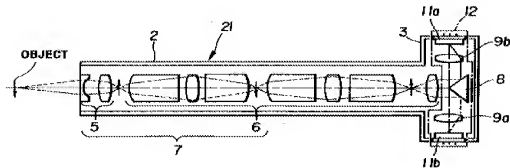


**FIG.1**

Figure 1 shows the construction of a stereoscopic rigid-type endoscope according to a first embodiment. *Id.* at col. 3, ll. 17-19. In this figure, numeral 2 designates the “inserting section” and numeral 3

designates the “operating/holding section.” *Id.* at col. 4, ll. 7-12. Inserting section 2 contains a “relay lens system 7” comprising an objective lens system 5 and a “relay lens section 6” that is shown having three lens groups. *Id.* at col. 4, ll. 14-22. We agree with Appellants that the Examiner erred in finding that “as seen in figure 1, the endoscope system comprises a set of three lenses 6, two being in the inserting section and one being in the camera head.” (Answer 6-7.) The only lenses included in camera head 3 in Figure 1 are “image forming” lenses 9a and 9b (Takahashi, col. 4, ll. 40, 46), which are not part of relay lens section 6. All of the lenses of relay lens section 6 are contained in inserting section 2, which is shown broken away in Figure 1.

Figure 2 of Takahashi is reproduced below.



**FIG.2**

Figure 2 is described by Takahashi as “show[ing] the construction of another stereoscopic rigid-type endoscope according to the first embodiment.” *Id.* at col. 3, ll. 20-21. This brief description constitutes Takahashi’s only discussion of Figure 2.

In Figure 2, the last of the seven lenses included in bracket 6, which designates the relay lens section, is located inside operating/holding section 3, which additionally includes a rotating section 12 that houses a prism 8, image forming lenses 9a, and 9b, and CCDs 11a and 11b. *Id.* at col. 4, ll. 51-55. Therefore, Appellants' argument that "Takahashi does not teach a camera head that includes a part of the relay optical system, since the relay lens section 6 and relay lens system 7 are instead included in the inserting section 2 of the stereoscopic rigid-type endoscope 1" (Br. 7) appears to be incorrect with respect to the Figure 2 embodiment. Furthermore, counsel for Appellants conceded as much during oral argument:

JUDGE MARTIN: Oh, I do have another question about the claim language. The claim language, when it talks about what's in the camera head, says, "Wherein the camera head includes a part of the relay optical system."

In the reference Takahashi, if we look at Figure 2 again, the thing that holds the camera -- and it looks like you could call it a head. . . . That last relay lens is not rotatable with the CCD's and their associated imaging lenses . . . . The camera head, if we can call it that, does include that last lens, doesn't it? Or do you think "includes" is more restrictive than that?

MR. BROWN: I would have to say that it appears that it would include it although there does seem to be some type of sectional section in the holding section [3] that includes other elements; but just from the figure, I think it would be difficult to say that that's not actually included in the head physically.

Hr'g Tr. 6:11-25.

Because Appellants have not argued, let alone demonstrated, that Takahashi's Figure 2 embodiment fails to show (1) a camera head that

includes a part of a relay optical system and (2) a front-end inserting section that includes the remaining part of the relay optical system, and because Appellants have not asserted that the rejection is improper even assuming Takahashi's Figure 2 makes such a showing, we are affirming the rejection of claim 1 for obviousness over Igarashi '232 in view of Takahashi and also the rejection on that ground of dependent claims 6-18, which are not separately argued. 37 C.F.R. § 41.37(c)(1)(vii) (2006).

Claim 2, which stands rejected for obviousness over Igarashi '232 in view of Takahashi and Igarashi '634, reads as follows:

2. A rigid-endoscope as defined in claim 1, wherein said camera head including a view field mask, wherein said view field mask, said imaging optical system and said solid-state image sensor are constructed to be integrally moved along the optical axis in a focusing operation.

Claims App. (Br. 12.)

The Examiner found that Igarashi '232 teaches movement of a visual field mask and an imaging optical system for a focusing operation but fails to teach movement of the imaging sensor for a focusing operation, for which teaching the Examiner cites column 4, lines 57-67 of Igarashi '634. Final Action 6. Specifically, the Examiner stated that

Igarashi (US 5,902,232) teaches the movements of a visual field mask and the imaging optical system for a focusing operation, but he fails to teach the movements of the imaging sensor. Although Igarashi (US 5,902,232) and Takahashi et al. (US 5,588,948) fail to teach this, Igarashi (US 5,954,634) does (Igarashi: Column 4, lines 57-67). Since the difference between integrating the imaging sensor with the movements of the visual

field mask and the optical system could just be the difference of focusing or magnification[,] it would have been obvious to one of ordinary skill that the separate or integrated imaging sensor would achieve the same results.

Final Action 6.

Regarding the rejection of claim 2, Appellants (Br. 10) merely quote a passage from MPEP § 2143 (8th ed. rev. 7, July 2008) that summarizes the criteria for a prima facie case of obviousness and assert that

none of the applied references disclose or fairly suggest, singly or in combination, the features of claim 2 concerning *wherein said camera head including [sic; includes<sup>2</sup>] a view field mask, wherein said view field mask, said imaging optical system and said solid-state image sensor are constructed to be integrally moved along the optical axis in a focusing operation.*

(Br. 10.) Because this assertion is not accompanied by an explanation of why the Examiner's rationale for constructing the recited components for integral movement is erroneous, we are affirming the rejection of claim 2 and the implied rejection on the same ground of its dependent claims 3-5, which are not separately argued.

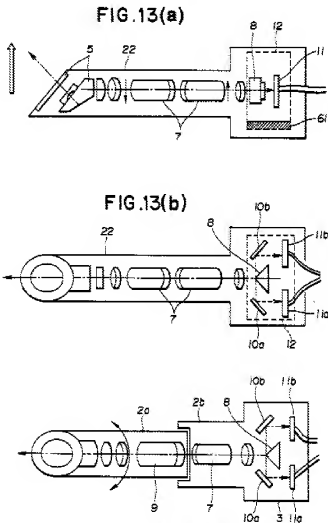
In summary, we are affirming the Examiner's rejections of claims 1-18 under 35 U.S.C. § 103(a) for obviousness over the cited prior art.

#### NEW GROUND OF REJECTION

Pursuant to our authority under 37 C.F.R. § 41.50(b), we are hereby entering the following new ground of rejection of claim 1.

Claim 1 is hereby rejected under 35 U.S.C. § 103(a) for obviousness over Takahashi considered with or without Igarashi '232.

Takahashi's Figures 13(a), 13(b), and 14 are reproduced below.



<sup>2</sup> This error also appears in claim 2.

Figures 13(a) and (b) show the construction of a stereoscopic rigid-type endoscope according to a fourth embodiment, while Figure 14 shows the construction of a stereoscopic rigid-type endoscope according to a fifth embodiment. *Id.* at col. 3, ll. 48-53.

Based on a comparison of the Figure 14 embodiment with the embodiment depicted in Figures 13(a) and (b), which includes a relay lens system 7 consisting of two lenses each numbered “7,” it appears that lenses 7 and 9 in the Figure 14 embodiment likewise form a relay lens system.<sup>3</sup> Furthermore, nothing in the language of claim 1 prevents the recited “front-end insertion section” from being read on Takahashi’s front inserting section 2a (including relay lens 9), or the recited “camera head” from being read on the rear inserting section 2b (including relay lens 7) in combination with operating/holding section 3 (including CCDs 11a, 11b), thereby satisfying the requirement of claim 1 that the “camera head” include a part of said relay optical system and the “front-end insertion section” include the remaining part of the relay optical system. Appellants, in response to a similar conclusion in the initial (now vacated) Decision on Appeal, argue that

one of ordinary skill in the art would view the rear insertion section 2b as part of the insertion section and not as part of a camera head, since one of ordinary skill in the art would readily understand that the insertion section, including rear insertion section 2b, would be inserted within a patient during surgery or medical examination, while the camera head is external and never enters the patient. Moreover, it is submitted that this interpretation is clearly consistent

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<sup>3</sup> Reference numeral 9 is not mentioned in Takahashi’s specification.

with the embodiments and specification of the present application, while the BPAI's interpretation is clearly inconsistent, since the present specification clearly discloses that the camera is always external, does not include any part of the insertion section 2 and is attached to the endoscope, which includes the insertion section 2.

Req. Reh'g 3-4. This argument is unpersuasive because it is unsupported by a specific citation to anything in claim 1 or Appellants' Specification that allegedly would have been understood to preclude the recited "camera head" from having a distal portion that is physically capable of being inserted into a patient. In fact, the overall shape of the housing for Takahashi's rear inserting section 2b and operating/holding section 3 closely resembles the shapes of the camera heads depicted in Appellants' Figures 10 and 11, reproduced below.

FIG. 10

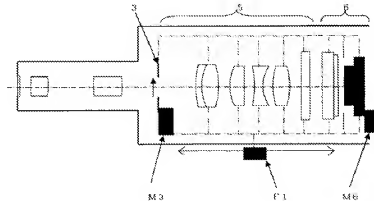
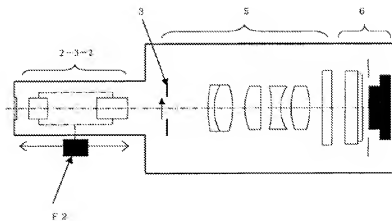




FIG. 11



Turning now to the claim 1 recitation that “the relayed image is formed . . . in the camera head” (more particularly, “formed between the relay optical system and the imaging optical system in the camera head”), a comparison of Takahashi’s Figures 1 and 14 suggests that the unnumbered lenses to the left of relay lens 9 in Figure 14 include an objective lens and that the unnumbered lens located between relay lens 7 and mirrors 10a and 10b constitutes an imaging lens. Finally, because relay lens 7 is located inside the camera head, the relayed image generated by relay lenses 7 and 9 necessarily will be generated in the camera head and between relay lens 7 and the imaging lens.

The last limitation recited in claim 1 is that “the insertion section and camera head are detachable.” Appellants are correct to argue (Req. Reh’g 4) that although inserting section 2a in the Figure 14 embodiment is described as being rotatable with respect to the inserting section 2b, Takahashi does not describe inserting sections 2a and 2b as detachable from each other.

Instead, Takahashi discusses detachability only in connection with the embodiments depicted in Figures 19 and 19b, each of which has a single inserting section 46 connected to an operating/holding section 47 (col. 3, ll. 60-67; col. 10, l. 66 - col. 11, ll. 5; col. 11, ll. 35-37). Also, we note that Takahashi does not explain the purpose of such detachability.

Nevertheless, we conclude that it would have been obvious to implement the rotatable connection between insertion section 2a and insertion section 2b in the Figure 14 embodiment as a detachable connection for either of two reasons. The first reason is that such detachability would have been recognized as advantageous in that it would permit replacement of either inserting section 2a or the combination of inserting section 2b and operating/holding section 3 in the event of failure of one of those components. See *Perfect Web Tech., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009) (“[W]hile an analysis of obviousness always depends on evidence that supports the required *Graham* [*v. John Deere Co.*, 383 U.S. 1 (1966)] factual findings, it also may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference or expert opinion.”). As evidenced by the absence of any construction details in their Application, Appellants considered construction of a detachable and rotatable connection between the insertion sections to be within the level of ordinary skill in the art.

An alternative reason (based on Igarashi ‘232) for making Takahashi’s inserting sections 2a and 2b detachable from each other is to

permit replacement of inserting section 2a after it has been contaminated. Use of Takahashi's Figure 14 embodiment involves manual rotation of inserting section 2a relative to inserting section 2b and operator/holding section 3. *See* Takahashi, col. 9, ll. 54-59 ("In accordance with this [Figure 2] embodiment, the operator can hold the operating/holding section 3, connected with the rear section 2b of the inserting section 2 and containing the image sensing system, rotating the front section 2a of the inserting section while keeping the operating/holding section 3 stationary with respect to the gravitational dimension.") (emphasis omitted). While this description does not clearly indicate whether inserting section 2b of operating/holding section 3 is or is not inserted in the patient after manual rotation of inserting section 2a relative to inserting section 2b, we conclude that it would have been obvious to use this embodiment without causing inserting section 2b to be inserted into the patient, especially in view of Igarashi '232's disclosure of making the inserting section, which is subject to contamination, detachable from the other components. *See* Igarashi '232, col. 8, ll. 61-64 ("Since the insert section 1 of the non-flexible endoscope shown in FIG. 2 or FIG. 3 can be detached from the eyepiece section 2 or the TV camera adaptor 3, the insert section 1 can be discarded after it is practically used and contaminated.") (emphasis omitted). As shown in Figure 4, reproduced below, Igarashi '232 further discloses using a sterilizing cover 8 to protect the parts of the endoscope that will not be inserted into the patient.

FIG. 4

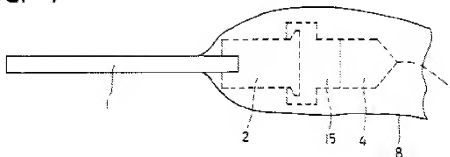


Figure 4 shows a sectional view illustrating a configuration of the non-flexible endoscope shown in Figure 3 provided with a sterilizing cover (*id.* at col. 4, ll. 60-62; col. 9, ll. 1-20).

Based on the foregoing teachings in Igarashi '232, we conclude that it would have been obvious to modify Takahashi's Figure 14 embodiment by making the rotatable connection between inserting sections 2a and 2b detachable as well as rotatable and also to use a sterilizing cover to protect operating/holding section 3, inserting section 2b, and the detachable coupling from contamination, with the cover being flexible enough to permit inserting section 2a to be manually rotated 360 degrees relative to inserting section 2b.

For the foregoing reasons, Takahashi's Figure 14 embodiment considered with or without Igarashi '232 renders obvious all of the limitations of claim 1.

Our failure to enter a new ground of rejection against any of the dependent claims should not be construed as implying a determination that those claims are patentable over the prior art teachings cited against claim 1.

*See* MPEP § 1213.02 (8th ed., rev. 7, July 2008) (“Since the exercise of authority under 37 CFR 41.50(b) is discretionary, no inference should be drawn from a failure to exercise that discretion.”) (editorial marks omitted).

### SUMMARY

We have vacated the August 20, 2009, Decision on Appeal in favor of this New Decision on Appeal.

The Examiner’s rejections of claims 1-18 under 35 U.S.C. § 103(a) for unpatentability over the cited prior art are affirmed.

We have entered a new ground of rejection against claim 1 under 35 U.S.C. § 103(a) for obviousness over Takahashi considered with or without Igarashi ‘232.

### APPELLANTS’ OPTIONS FOR RESPONDING TO THE DECISION AND TO THE NEW GROUND OF REJECTION

Regarding the affirmed rejections, 37 C.F.R. § 41.52(a)(1) (2009) provides that “Appellant may file a single request for rehearing within *two months* of the date of the original decision of the Board” (emphasis added).

Regarding the new ground of rejection entered pursuant to 37 C.F.R. § 41.50(b), that paragraph explains that “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.” Appellants, within *two months* from the date of this decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claim:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .  
37 C.F.R. § 41.50(b) (2009). *See also* MPEP § 1214.01 (8th ed., rev. 7, July 2008).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(v) (2009).

AFFIRMED; 37 C.F.R. § 41.50(b)

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